

MYASNIKOV, A.L.

"Vitamins in the development and prophylaxis of atherosclerotic heart disease."

Report to be submitted for the Sixth International Congress of Nutrition, of Edinburgh, Edinburgh, Scotland, from 9-15 Aug 63

MYASNIKOV, A.L., prof. (Moskva)

Pathogenesis of myocardial infarct. Kardiologiya 3 no.4:3-8
Jl.-Ag'63 (MIRA 17:3)

1. Deystvitel'nyy chlen AMN SSSR.

MYASNIKOV, A.L., prof.; LOGINOV, A.S., kand.med.nauk.

Take care of your liver. Zdorov'e 9, no.1212-13 Ja '63. (MIRA 16:7)

1. Deystvitel'nyy shlen AMN SSSR (for Myasnikov)
(LIVER)

MYASNIKOV, A.L., prof. (SSSR); PUSHKAR', Yu.T., kand. med. nauk (SSSR)

Trends in Soviet cardiology. Mir nauki no.1:20-24 '63.
(MIRA 16:6)

1. Deystvitel'nyy chlen AMN SSSR (for Myasnikov).
BLOOD-CIRCULATION, DISORDERS OF

MYASNIKOV, Aleksandr Leonidovich; CHAZOV, Yevgeniy Ivanovich;
SHKHAVTSABAYA, Igor' Konstantinovich; KIPSHIDZE, Nodar
Nikolayevich; VINOGRADSKIY, A.B., red.; MIREMGVA, A.M.,
tekhn. red.

[Experimental necroses of the myocardium] Eksperimental'-
nye nekrozy miokarda. Moskva, Medgiz, 1963. 202 p.

(MIRA 16:10)

(HEART--NECROSIS)

ACCESSION NR: AT4042705

S/0000/63/000/000/0368/0371

AUTHOR: Myasnikov, A. L.; Akhrem-Akhremovich, R. M.; Kakurin, L. I.; Pushkar', Yu. T.; Mukharlyanov, N. M.; Georgiyevskiy, V. S.; Tokarev, Yu. N.; Senkevich, Yu. A.; Katkovskiy, B. S.; Kalinina, A. N.; Cherepakhin, M. A.; Chichkin, V. A.; Filosofov, V. K.; Shamrov, P. G.

TITLE: Effect of prolonged hypokinesia on blood circulation in man

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy konferentsii. Moscow, 1963, 368-371

TOPIC TAGS: isolation, prolonged isolation, isolation chamber, isolation effect, bioelectric activity

ABSTRACT: Four young men 22 to 24 were subjected to voluntary bedrest for a period of 20 days. Tests on pulse, arterial pressure, rate of blood flow, venous pressure, etc., were run before and after the completion of the experiment. These tests were performed at rest and after functional exercises (30 knee bends at the rate of one every 1.5 sec). During the period of bedrest, pulse frequency diminished on the average by 14 strokes per minute; the arterial pressure diminish-

Card

1/2

ACCESSION NR. AT4042705

ed by 11.2 mm of Hg. Stroke volume diminished on the average by 6 ml, while the minute rate of blood flow was reduced by 1.6 liters. After completion of the bed regime, pulse frequency rose by 18 to 34 strokes per minute, while systolic pressure and minute blood volume increased. Deep knee bends brought about characteristic increases in the pulse rate and changes in arterial pressure and phases of the cardiac cycle. The length of time required for these indices to return to normal increased from three minutes to seven minutes. It can be assumed that similar functional changes in the cardiovascular system will take place in man after his return to normal gravity following prolonged weightlessness.

ASSOCIATION: none

SUBMITTED: 27Sep63

ENCL: 00

SUB CODE: 15

NO REF SOV: 000

OTHER: 00

Card

2/2

MYASNIKOV, Aleksandr Leonidovich, prof., red.; RYVKIN, Izrail'
Abramovich; BONDARENKO, B.A., red.

[Incidence of hypertension and coronary arteriosclerosis
and living conditions] Rasprostraneniye gipertonicheskoi
bolezni i koronarnogo ateroskleroza i usloviya zhizni;
sbornik statei. Leningrad, Medicina, 1964. 166 p.
(1964: 17.8)

1. Direktor Instituta terapii AMN SSSR, deystvitel'nyy chlen
AMN SSSR (for Myasnikov). 2. Institut terapii AMN SSSR (for
Ryvkina).

KYASHNIKOV, A.I., prof., red.; MITELTSEVA, V.I., red.

[atherosclerosis and thrombosis; transactions] Ateroskleroz i tromboz; trudy. Pod red. A.I. Kyashnikova. Moskva, Meditsina, 1964. 211 p. (MIRA 17:8)

1. Godichnaya nauchnaya sessiya Instituta terapii AMN SSSR, 15th, 1963. 2. Direktor Instituta terapii AMN SSSR, deystvitel'nyy chlen AMN SSSR (for Kyashnikov).

MYASNIKOV, A.L., prof., otv. red.; MOLCHANOV, H.S., red.; LUKOMSKIY,
P.Ye., prof., red.; VOTCHAL, B.Ye., prof., red.; DEYBO,
A.G., prof., red.; MUKHOMYANOV, B.M., kand. med. nauk,
red.

[Transactions of the 15th All-Union Congress of Theraputists]
Trudy Vsesoiuznogo s"ezda terapevtov. Pod obshchei red. A.L.
Miasnikova. Moskva, Meditsina, 1964. 520 p. (EINA 17:6)

1. Vsesoyuznyy s"ezd terapevtov. 15th, 1962. 2. Deystvi-
tel'nyy chlen AN SSSR (for Myasnikov, Molchanov, Lukomskiy).
3. Chlen-korrespondent AN SSSR (for Votchal).

VAL'DMAN, V.A., *zasl. deyatel' nauki RSFSR*, prof.; ZAMYSLOVA, K.N.,
 prof.; IL'INSKIY, B.V., prof.; KURSHAKOV, N.A.; LUKOMSKIY,
 P.Ye., prof.; MYASNIKOV, A.L., prof.; MOLCHANOV, N.S., prof.;
 RAYEVSKAYA, G.A., prof.; TEODORI, M.I., *kand. med. nauk*;
 CHERNOGOROV, I.A., prof.; TAREYEV, Ye.M., prof., *otv. red.*;
 OSTROVERKHOV, G.Ye., prof., *glav. red.*; SHAPIRO, Ya.Ye., prof.,
red. toma; LYUDKOVSKAYA, N.I., *tekh. red.*

[Multivolume manual on internal diseases] *Mnogotomnoe rukovod-*
stvo po vnutrennim bolezniam. Otv. red. E.M.Tareev. Moskva,
Izd-vo "Veditsina." Vol.2. [Diseases of the cardiovascular
system] Bolezni serdechno-sosudistoi sistemy. Red. toma A.L.
Miasnikov. 1964. 614 p. (MIRA 17:3)

1. *Deystvitel'nyy chlen AMN SSSR* (for Tareyev, Myasnikov,
 Lukomskiy, Molchanov). 2. *Chlen-korrespondent AMN SSSR* (for
 Kurshakov).

*

RATNER, N.A., prof.; PUSHKAR, Yu.I., st. nauchn. sotr.;
SHKHAVTSABAYA, I.K., st. nauchn. sotr.; ZYSKO, A.P., kand.
med. nauk; VOSKANOV, M.A., kand. med. nauk; MYASNIKOV,
A.L., prof., red.; CHAZOV, Ye.I., doctor med. nauk, red.;
METELITSA, V.I., red.

[Hypertension and atherosclerosis of the coronary arteries;
methodological instructions on diagnosis, treatment and
prevention] Gipertonicheskaya bolezni i ateroskleroz koron-
narykh arteriy: metodicheskie ukazaniya po diagnostike, le-
cheniyu i profilaktike. Moskva, 1964. 176 p.

(MIRA 18:5)

1. Akademiya meditsinskikh nauk SSSR, Moscow, Institut te-
rapii. 2. Deystvitel'nyy chlen AMN SSSR (for Myasnikov).

MYASNIKOV, A.L., prof.; KUDRYASHOV, B.A., prof.; CHAZOV, Ye.I., starshiy
nauchnyy sotrudnik; ANDREYENKO, G.V., starshiy nauchnyy
sotrudnik

Compound fibrinolysin and heparin therapy of vascular
thrombosis. Kardiologiya no.1:3-8 '64. (MIRA 17410)

1. Institut terapii AMN SSSR, Moskva. 2. Deystvitel'nyy chlen
AMN SSSR (for Myasnikov).

APROSINA, Z.G., kand. med. nauk; AFANAS'YEVA, K.A., kand. med. nauk;
 AKHREM-AKHREMOVICH, A.M., prof.; BLYUGER, A.F., doktor med.
 nauk; BONDAR', Z.A., prof.; VASILENKO, V.Kh., prof.; KIKODZE,
 I.A., kand. med. nauk; LINDENBRATEN, L.D., prof.; LOGINOV,
 A.S., kand. med. nauk; MANCUROV, Kh.Kh., prof.; NAZARETYAN,
 Ye.L., kand. med. nauk; NOGALLER, A.M., prof.; PLOTNIKOV,
 N.N., prof.; SEMENDYAYEVA, M.Ye., kand. med. nauk; TAREYEV,
 Ye.M., prof.; TAREYEV, I.Ye., kand. med. nauk;
 TER-GRIGOROVA, Ye.N., prof.; CHERNYSHEVA, Ye.V., kand. med.
 nauk; SHVARTS, L.S., prof.; MYASNIKOV, A.L., prof., zam. otv.
 red.; BOGOSLAVSKIY, V.A., red.; SEMENDYAYEVA, M.Ye., red.

[Multivolume manual on internal diseases] Mnogotomnoe rukc-
 vodstvo po vnutrennim bolezniyam. Moskva, Meditsina. Vol.5.
 1965. 724 p. (MIRA 18:9)

1. Deystvitel'nyy chlen AMN SSSR (for Tareyev, Ye.M.,
 Vasilenko, Myasnikov)

MYADNIKOV, A.I., LYVKIN, I.V. (Moskva;

Prevention of hypertension and coronary atherosclerosis.

Veat. AMN SSSR 20 no.6.30-41 In 5. (MIRA 1970)

MYASNIKOV, A.L. (Moskva)

Classification of cardiac insufficiency. Kardiologia 5 no.1:
3-7 Jan-F '65. (MIRA 18:9)

MYASNIKOV, Aleksandr Leonidovich, prof. kardiolog; KARPOVA, G.D.,
red.

[Hypertension and atherosclerosis] Gipertonicheskaia bo-
lezn' i aterioskleroz. Moskva, Meditsina, 1965. 613 p.
(MIRA 18:8)

1. Deystvitel'nyy chlen AMN SSSR direktor Institut terapii
AMN SSSR (for Myasnikov).

MYASNIKOV, A.M., st. inzh.; LIKHOLET, S.F., st. inzh.; BIZHAN, B., inzh.; KOMISSAROV, G.S.; KISELEV, F.S., inzh.; TUPIKOV, V.I., st. inzh.; KARPOVA, Z.A., st. inzh.; KLETSEL', M.M., inzh.; MATSKEVICH, A.V., inzh.; PUSTOVOYTOVA, K.S., red.; MOISEYEV, I.N., red.; IVANOVA, Z.V., tekhn. red.

[Hydrological yearbook] Gidrologicheskii ezhegodnik. Lenin-grad, Gidrometeoizdat. 1960. Vol.2. No.7-9. Pod red. K.S. Pustovoitovoi. 1962. 418 p. (MIRA 16:5)

1. Gidrologicheskaya stantsiya Severo-Kavkazskogo upravleniya gidrometeorologicheskoy sluzhby Serafimovich (for Myasnikov).
2. Gidrologicheskaya stantsiya Severo-Kavkazskogo upravleniya gidrometeorologicheskoy sluzhby Kalach-na-Donu (for Likholet).
3. Gidrologicheskaya stantsiya Ryzdorskaya Severo-Kavkazskogo upravleniya gidrometeorologicheskoy sluzhby (for Bizhan).
4. Nachal'nik gidrologicheskoy stantsii Sal'sk Severo-Kavkazskogo upravleniya gidrometeorologicheskoy sluzhby (for Komissarov).
5. Khar'kovskaya gidrometeorologicheskaya observatoriya (for Tupikov).
6. Khar'kovskaya gidrologicheskaya stantsiya (for Karpova).
7. Saratovskaya gidrologicheskaya stantsiya (for Kletsel').
8. Gidrologicheskaya stantsiya Kaluga (for Matskevich).

(Hydrology--Tables, calculations, etc.)

L-20964-66 ENT(1) SCTB DD

ACCESSION NR: AP5022850

UR/0375/65/000/009/0060/0061

AUTHOR: Myasnikov, A. P. (Docent) (Lieutenant Colonel of medical service); Fedotov, V. V. (Candidate of medical sciences) (Lieutenant Colonel of medical service) 8

TITLE: Evaluation of conditions in compartments of a sunken submarine by a physician-physiologist

SOURCE: Morskoy sbornik, no. 9, 1965, 60-61

TOPIC TAGS: human physiology, submarine, rescue operation, survival training, submarine training

ABSTRACT: The authors propose a graphic presentation of rescue operations in a sunken submarine, stating that existing tables are not sufficiently descriptive and are incomplete in their evaluation of an emergency situation (see Fig. 1 of the Enclosure). Such a graphic system could be put on a form 50 x 100 cm. The authors go on to propose hypothetical situations which could occur in a sunken submarine, for the benefit of a physician-physiologist involved in rescue operations. The benefit of a graphic approach to submarine rescue operations is that it aids in developing clear-cut habit patterns in officers and saves decision-making time. The authors' approach has been incorporated into the training practice in the Soviet Navy and at the Military Medical Academy imeni Kirov. Orig. art. has: 2 figures. [CD]

Card 1/3

L 20964-66

ACCESSION NR: AP5022850

ASSOCIATION: none

SUBMITTED: 00

ENCL: 01

SUB CODE: LS,MS

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4114

Card 2/3

MYASHNIKOV, A.P., kand.med.nauk (Leningrad, st.Pesochnaya-2, 14-y kv., d.218, kv.1)
STAMATIN, S.I.

Treatment of pancreatic fistulae caused by gunshot. Vest.khir.
80 no.4:121-125 Ap'58 (MIRA 11:5)

1. Iz fakul'tetskoy khirurgicheskoy kliniki No.2 (nach. - prof.
A.V. Mel'nikov) i kafedry normal'noy fiziologii (nach. - prof. I.T.
Kurtsin) Voenno-meditsinskoy ordena Lenina akademii im. S.M. Kirova)
(PANCREAS, fistula
traum. caused by gunshot, surg. (Rus))
(WOUNDS & INJURIES
gunshot causing pancreatic fistula (Rus))

30441
S/109/61/006/012/016/020
D266/D305

26.2322

26.2531

AUTHORS: Ignatenko, V.P. and Myasnikov, A.S.

TITLE: Compensation of ion space charge by electrons

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 12, 1961,
2084 - 2092

TEXT: The purpose of the paper is to analyze a particular arrangement of electrodes (Fig. 1) capable of producing mixed flow of ions and electrons. In order to simplify the analysis the following assumptions are made: (1) the flow is stationary and obeys the laws of electrostatics, (2) the presence of ions due to an incomplete vacuum is ignored, (3) recombination of the particles is neglected, (4) grid-currents are zero and the electric field in the plane of the grid is uniform, (5) initial velocities are the same for each particle. The ions are emitted by an anode of voltage V_M and accelerated by a grid of zero voltage (Fig. 1). The ions are given sufficient energy to reach the electron emitter. The distance l is chosen in such a way that the potential due to the space charge of

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30441
S/109/61/006/012/016/020
D266/D305

Compensation of ion space ...

ions is larger than the potential of the electron emitter, V_0 . The problem is divided into two parts: (i) to ensure that the ions reach the electron emitter, (ii) to maintain the ion-electron beam in the drift space. The potential distribution is calculated from Poisson's equation assuming that both the ion and the electron current are constant. The electric field at both emitters is assumed to be zero. In region I there are only ions while in region II both types of charged particles are present. The solutions (length formulae containing elliptic integrals) are matched at the common boundary (for these calculations region III is taken as zero). The mathematical conditions are determined under which $V_m > V_0$ (V_m is the maximum value of the potential in the inter-electrode space) which is necessary for operating the device. It is interesting to note that for certain values of l/d the maximum voltage has two values which is a consequence of ionic hysteresis. Neglecting initial velocities the potential distribution in the drift space is obtained in the form of a periodic function. If the ion and electron currents are equal the difference between V_m and V_0 is compa-

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30441

S/109/61/006/012/016/020

D266/D505

Compensation of ion space ...

rable with thermal velocities. It is claimed, however, that the effect of random initial velocities does not alter the conclusions only in that case the parameters of the virtual cathode should be used. There are 5 figures and 4 references: 1 Soviet-bloc and 3 non Soviet-bloc. The references to the English-language publications read as follows: J.K. Pierce: Theory and design of electron beams, Van Nostrand, New York, R. Wentzel, Z. angew. Phys., 1952, 4, 3, 94; I. Langmuir, Phys. Rev., 1929, 33, 6, 954.

SUBMITTED: April 4, 1961

X

Card 3/4

MYASNIKOV, A.V.

DISPATCHERSKO-INFORMATSION NAYA SLUZHBA V PUTEVOM KHOZYAYSTVE RECHNOGO TRANSPORTA
MOSKVA, RECHIZDAT, 1940 54 p.

DEMIDOV, P.I., inzh.; MYASNIKOV, A.V., inzh.

Universal terminal pontoon for a dredge pipeline. Rech.transp. 18
no.7:43 JI '59. (MIRA 12:11)
(Dredging machinery) (Pontoons)

KAZAK, N.A., kand. tekhn. nauk (Moskva); MYASNIKOV, A.V., inzh. (Moskva);
ZHURILIN, V.A. (Sverdlovsk)

Concerning G.I. Kornilov's article "Economic expediency of
reservation networks in the electric power supply of industrial
enterprises. Elektrichestvo no.11:82-84 N '65.

(MIRA 18:11)

MEZHUYEV, S.F.; GLINSKIKH, V.A., starshiy elektromekhanik; MYASNIKOV, A.Ya., elektromekhanik; MAZUROK, V.S.

From the editor's mail. Avtom., telem. i svyaz' 4 no.1:44
Ja '60. (MIRA 13:4)

1. Nachal'nik Aktyubinskoy distantzii signalizatsii i svyazi Kazakhskoy dorogi (for Mezhuiev).
2. Sverdlovskaya distantziya signalizatsii i svyazi Sverdlovskoy dorogi (for Glinskikh).
3. Grodnenskaya distantziya signalizatsii i svyazi Belorusskoy dorogi (for Myasnikov).
4. Starshiy inzhener proyektno-konstruktorskogo byuro "Metallurgavtomatika" (for Mazurok).
(Railroads--Communication systems)
(Railroads--Signaling)

MYASHNIKOV, Boris Aleksandrovich; SHARPILO, P.N., red.; MEDNIKOVA, A.N.,
tekhn.red.

[Conscience of the regiment; essays about communists] Sovest'
polka; ocherki o kommunistakh. Moskva, Voen.izd-vo M-va
oborony SSSR, 1961. 94 p. (MIRA 14:12)
(Soldiers)

MYASNIKOV, B.K., inzh.; VARVARIN, N.N., inzh.

Reducing and simplifying technological specifications and
standardisation papers. Sudostroenie 23 no.8:62 Ag '57.
(MIRA 10:11)
(Shipbuilding--Contracts and specifications)

S/108/63/018/001/008/011
D201/D308

AUTHOR: Myasnikov, B.N.

TITLE: A tunnel-diode relaxation oscillator with a wide range of pulse durations

PERIODICAL: Radiotekhnika, v. 18, no. 1, 1963, 48-52

TEXT: The author proposes an analytical-graphical method for calculating the pulse duration. By approximating the initial positive slope of the characteristic by a straight line and the next positive slope by an exponential, the tunnel diode may be replaced by two sequentially switched resistors shunted by the diode junction capacitance. This representation makes it easy to derive the pulse duration as a function of initial potential across the diode. Experimental verification gave good agreement with theory. There are 6 figures.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Tech-

Card 1/2

A tunnel-diode relaxation ...

S/108/63/018/001/008/011
D201/D308

nical Society of Radio Engineering and Electrical
Communications imeni A.S. Popov) [Abstracter's
note: Name of Association taken from first page of
journal]

SUBMITTED: December 7, 1961 (initially)
June 20, 1962 (after revision)

Card 2/2

APPROVED FOR RELEASE
ACCESSION NR: AP4038600

S/0108/64/019/005/0030/0036

AUTHOR: Myasnikov, B. N.

TITLE: Concerning one method of transient analysis of a delayed tunnel-diode relaxator with shaping line

SOURCE: Radiotekhnika, v. 19, no. 5, 1964, 30-36

TOPIC TAGS: tunnel diode, delay line, relaxation oscillator, monostable generator

ABSTRACT: The operation of the system is first analyzed under the assumption of zero loss, zero internal source resistance, and zero tunnel-diode capacitance. A chain of equations relating the currents and voltages during each reflection of the wave in the delay line is derived from the line differential equations and is solved graphically by the Bergeron method (L. Bergeron, From water hammer to discharges in electric circuits [Russ. transl.], Mashqiz, 1962). The conditions for the occurrence of relaxations and the dependence of the duration of the quasistable state on the initial and boundary conditions are obtained. The effect of ohmic losses is then taken into account. Depending on the wave resistance W of the line, the system can be used to shape pulses (small W) or

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ACCESSION NR: AP4038600

as a variable delay element (large W) in which the delay is varied by changing the tunnel-diode bias or the tunnel diode and line parameters. Orig. art. has: 8 figures and 16 formulas.

ASSOCIATION: None

SUBMITTED: 20Jul62

ENCL: 02

SUB CODE: EC

NR REF SOV: 004

OTHER: 000

Card 2/4

L 62856-65

ACCESSION NR: AP5019040

UR/0286/65/000/012/0070/0070

624.023.87 : 691—412 : 728 ³

AUTHOR: Krasnosel'skiy, L. M.; Zinurov, T. T.; Kolesayev, A. V.; Krotovskiy, S. S.;
Myasnikov, B. N.

TITLE: A construction unit. Class 37, No. 172023

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 12, 1965, 70

TOPIC TAGS: structural element, construction method

ABSTRACT: This Author's Certificate introduces a completely prefabricated construction unit with finished retaining walls and partitions, a ceiling and a floor. The device is designed for multiple-point support and frame construction. Receptacles are located along the retaining plates of the structure. In the process of joining the units together, those receptacles are filled with a bonding solution and U-shaped anchors are forced into them.

ASSOCIATION: none

Card 1/3

L 62856-65

ACCESSION NR: AP5019040

SUBMITTED: 21May62

ENCL: 01

SUB CODE: ☐

NO REF SOV: 000

OTHER: 000

Card 2/3

L 62856-65

ACCESSION NR: AP5019040

ENCLOSURE: 01

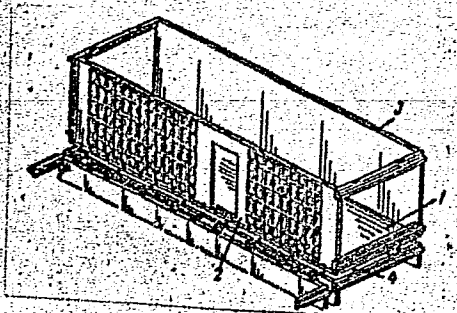


Fig. 1. 1--floor;
2--retaining walls;
3--receptacles; 4--anchors

dm
Card 3/3

ACC NR: AP7002383

SOURCE CODE: UR/0020/66/171/005/1069/1071

AUTHOR: Davydov, A. S. (Academician AN UkrSSR); Myasnikov, E. N.

ORG: Institute of Physics, Academy of Sciences, UkrSSR (Institut fiziki Akademii nauk UkrSSR)

TITLE: Absorption and dispersion of light upon formation of molecular excitons

SOURCE: AN SSSR. Doklady, v. 171, no. 5, 1966, 1069-1071

TOPIC TAGS: exciton absorption, light absorption, light dispersion, Green function, phonon interaction, refractive index, dielectric constant

ABSTRACT: The authors investigated by the method of temperature retarded Green's functions the shape of the absorption bands and the dispersion of light when excitons are produced in three-dimensional crystals. Account is taken of the interaction with the acoustical and optical phonons. An expression is derived for the dielectric tensor in the region of exciton-absorption frequencies, and the components of this tensor are plotted for different temperatures. The dispersion of the refractive index and of the attenuation coefficient are then determined. The results show that at low temperatures the absorption (the imaginary part of the dielectric constant) has a sharp maximum with a slight structure on the high-frequency side. With increasing temperature, the height of the principal maximum drops and the absorption on the high-frequency side of the principal maximum broadens and becomes more intense. When the interaction with the acoustic phonons is slight, the half-width of the prin-

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UDC: 545.342.2

ACC NR: AP7002383

cipal maximum depends on the number of optical phonons present at the given temperature. With increasing interaction with the acoustic phonons, the short-wave part of the principal maximum broadens and becomes more asymmetric. The results are compared with those obtained by others. Orig. art. has: 2 figures and 7 formulas.

SUB CODE: 20/ SUBM DATE: 09Sep66/ ORIG REF: 002/ OTH REF: 004

Card 2/2

MYASHNIKOV, P.

ANGELINA, P., geroy Sotsialisticheskogo Truda, laureat Stalinskoy premii;
TSIMIDANOV, K.; MEL'NIK, V.; MYASHNIKOV, P.; YEFREMOV, G.; BOGACH, N.,
geroy Sotsialisticheskogo Truda; ABROSIMOV, V., geroy Sotsialisticheskogo Truda; PAVLOV, M.; ARONOV, L.

Radio network for every machine-tractor station. Radio no.4:6-9 Ap '54.
(MLRA 7:4)

1. Brigadir traktornoy brigady Staro-Beshevskoy MTS, Stalinskoy oblasti, deputat Verkhovnogo Soveta SSSR (for Angelina).
 2. Direktor Staro-Beshevskoy MTS, Stalinskoy oblasti (for TSimidanov).
 3. Sekretar' rayon-nogo komiteta KPSS po zone Golobskoy MTS, Volynskoy oblasti (for Mel'nik).
 4. Direktor Isetskoy MTS, Tyumenskoy oblasti (for Myashnikov).
 5. Direktor Pon'kinskoy MTS, Shadrinskogo rayona, Kurganskoy oblasti (for Yefremov).
 6. Direktor Kotovskoy MTS, Odesskoy oblasti (for Bogach).
 7. Direktor Shestakovskoy MTS, Kirovogradskoy oblasti (for Abrosimov).
 8. Glavnyy inzhener Upravleniya sel'skogo khozyaystva Stavropol'skogo kraya (for Pavlov).
 9. Direktor Ol'ginskoy MTS, Poltavskogo rayona, Omskoy oblasti (for Aronov).
- (Radio) (Machine-tractor stations)

MYASNIKOV, G.F.

Fuel Abstracts
Vol. XV, No. 2
Feb. 1954
Natural Solid
Fuels: Winning

✓ G.F. OPERATION OF DIBBASS CUTTER-LOADERS IN ABASHEVSKAYA NO. 1. MINE
IN KUZBASS. Myasnikov, G.F. ✓ (Ugol (Coal), Apr. 1953, 37-39). Conditions
and organization of the work are described, and several defects in the
machine are mentioned. (L).

МЯСНИКОВ, Геннадий. ✓

Miasnikov, Gennadij. Staticheskoye vyroschet tovarnih ly "R 113". (V 1. 1.) Prilozhenie k pedagogickej nashl, 1943. 68 n. (Uchebni teksty vstavleni kol) (Static calculation of a factory building of the hall R 113 type. Diagram, tables)

SO: Monthly List of East European Publications, L C, Vol. 3 No. 1 Jan. 1944, p. 1.

MYASNIKOV, G.V.

Youth working on the capital's construction projects. Ger.khoz.
Mosk. 28 no.10:5-8 0 '54. (MLRA 7:11)

1. Sekretar' Moskovskogo gorodskogo komiteta Vsesoyuznogo Leninskogo
Kommunisticheskogo Soyuza Molodezhi.
(Moscow--Building) (Building--Moscow) (Communist Youth League)

MIASNIKOV, G. //.

A record length span suspension bridge for a cableway. p. 272. (Inzenyrske Stavby, Vol. 5, No. 5, May 1957, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) IC, Vol. 6, No. 8, Aug 1957. Uncl.

MYASNIKOV, G.V., starshiy prepodavatel'

Synthesis of two-speed planetary mechanisms.
Izv.vys.ucheb.zav.; mashinostr.no.1:57-68 '63.

1. Moskovskiy gornyy institut.
(Gearing)

(MIRA 16:5)

MYASNIKOV, I.

Production conferences on livestock farms. Sov. profsoiuzy 3
no.6:52-54 Je '55. (MLRA 8:8)

1. Predsedatel' rabochego komiteta profsoyuza Mitrofanovskogo
sovkhoza, Chelyabinskoy oblasti.
(Stock and stockbreeding)

ZAK, P.S.; MYASNIKOV, I.A.

Precision of hole reaming with floating blades. Tekh.ugol.mash.
no.1:34-37 '58. (MIRA 12:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy proyektno-tekhnologicheskiy institut ugol'nogo mashinostroyeniya.
(Machine-shop practice)

MYASNIKOV, I. A.

USSR .

The internal diffusion sorption dynamics in the linear region. I. A. Myasnikov and K. A. Golbert (L. V. Kuznetsov Institute of Chemistry, Moscow). *Zhur. Fiz. Khim.* 57, 1811-1816 (1983). — A method is given for calculating the sorption dynamics in the region of Henry's law, for the case where the limiting step in the sorption kinetics is the internal diffusion. These calculations can be used to solve the practical questions in constructing adsorption columns, etc.

J. Roytar Leach

Category: USSR / Physical Chemistry - Photochemistry. Radiation
Chemistry. Theory of the Photographic Process

B-10

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30080

Author : Myasnikov I. A., Pshezhetskiy S. Ya.

Inst : Academy of Sciences USSR

Title : Desorption of Oxygen from ZnO by the Action of Light and Its Effect
on Photoconductivity

Orig Pub: Dokl. AN SSSR, 1954, 99, No 1, 125-128

Abstract: Study of dark-conductivity and photoconductivity of ZnO, in vacuum and in the presence of O₂, has shown that O₂ by becoming adsorbed at the surface of microcrystals of ZnO, due to capture of conductivity electrons, alters substantially its dark- und photoconductivity. On illumination of ZnO there occurs, in the region of natural absorption (3600 Å), a considerable increase of conductivity in comparison with photoconductivity of ZnO in vacuum. It is shown, in the paper, that this effect is not associated with heating of ZnO and can be attributed only to a process of desorption of O₂ under the influence of

Card : 1/2

-1-

MYASNIKOV, I. A.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 24/40

Authors : Myasnikov, I. A., and Pshezhetskiy, S. Ya.

Title : Study of the connection between the catalytic and semi-conductive properties of ZnO.

Periodical : Dok. AN SSSR 99/2, 277-279, Nov 11, 1954

Abstract : The electrical conductivity and catalytic activity of ZnO were investigated parallel during the dehydrogenation of isopropyl alcohol which, as is known, leads to the formation of acetone. The effect of oxygen on the catalytic activity of ZnO in hydrogen and in nitrogen atmosphere, regardless of the reducing effect of hydrogen, is debated. Data regarding the changes in electrical conductivity during the presence and absence of oxygen are tabulated. The effect of temperature, on the above mentioned properties of ZnO, is explained. The existence of a symbiosis between the changes in electr. conductivity and catalytic activity of ZnO was established. One USSR reference (1953). Graphs.

Institution : The L. Ya. Karpov, Physico-Chemical Institute

Presented by : Academician V. A. Kargin, June 14, 1954

BAKH, N.A., professor, doktor khimicheskikh nauk, redaktor; VERESHCHINSKIY,
I.V., redaktor; DOLIN, P.I., redaktor; MYASNIKOV, I.A., redaktor;
KISELEVA, A.A., tekhnicheskii redaktor. ~~MLRA 8:11~~

[Collection of papers on radiation chemistry] Sbornik rabot po
radiatsionnoi khimii. Moskva, 1955. 262 p. (MLRA 8:11)

1. Akademiya nauk SSSR.
(Radiation)

BARANOV, V.I.; VINOGRADOV, A.P., akademik, redaktor; MYASNIKOV, I.A.
redaktor; STRUCHKOV, Yu.F., redaktor; MOSKVICHEVA, N.I., tekhnicheskii redaktor.

[Radiometry] Radiometriia. Moskva, Izd-vo Akademii nauk SSSR,
1955. 327 p. (MLRA 8:12)
(Radiation--Measurement)

Myasnikov, I. A.

✓ The formation of ozone in liquid oxygen by the action of fast electrons. S. Ya. Pshezhetskii, I. A. Myasnikov, and N. A. Bunev. *Symposium on Radiation Chem., Moscow* 1955, 111-17 (Engl. translation).—See C.A. 50, 9150g.

B. M. R.

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MYASNIKOV, I. A.

✓ The formation of ozone in liquid oxygen by the action of fast electrons. S. Ya. Fikhtenshteyn, I. A. Myasnikov, and N. A. Bugayev. *Dokl. Akad. Nauk S.S.S.R.*, 1985, 133-41. — Ozone is formed by bombarding liquid O with 100-200-k.v. electrons or by γ -radiation from Co^{60} . The amt. of O_3 formed was detd. as functions of the time and intensity of irradiation. The relation between intensity of radiation and amt. of O_3 produced is linear. The amt. of O_3 formed increases with increasing time of irradiation at 1st, but after about 40 min. a stationary state is reached, at which point the yield is approx. 6×10^{-4} moles or 4.5 mole percent. For a 10-min. irradiation, the yield of the reaction is evaluated as 5 to 12 mol. O_3 per 100 e.v. of absorbed energy. Dilg. the O with N does not have any effect on the formation of O_3 . The mechanism of the O_3 formation is discussed.

J. Rovtar Leach

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AF701597

TREASURE ISLAND BOOK REVIEW

AID 794 - S

MYASNIKOV, I. A. and S. YA. PSHEZHETSKIY (Phys.-Chem. Institute im. L. Ya. Karpov).

DESORBTSIYA KISLORODA S OKISI TSINKA POD DEYSTVIYEM SVETA I VLIYANIYE YEYE NA FOTOPROVODIMOST' (Desorption of oxygen from zinc oxide under the action of light and its effect on photoconductivity). In Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis), vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section I: Effect of illumination on the adsorbability of solids. p. 34-39.

At room temperature the conductivity of ZnO is extremely sensitive even to minute traces of oxygen. At an oxygen pressure of 10^{-3} mm Kh, the conductivity of the ZnO-film decreases to half its original value in 30 min. (Fig. 5, p. 36). At 700-800°C, the effect of oxygen on the photoconductivity of ZnO is less pronounced. Oxygen can be removed from ZnO only by heating it in vacuo at 400-500°C. Fig. 1, (p. 34) shows an apparatus for measuring the conductivity and photoconductivity of ZnO; the conductivity of ZnO is illustrated in Figs. 2, 3 (p. 35), 4, 5 (p. 36), 6, 7 (p. 37), 9 and 10 (p. 38). Fig. 8, (p. 38) illustrates an apparatus for determination of the conductivity and

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TREASURE ISLAND BOOK REVIEW

AID 821 - S

MYASNIKOV, I. A. and S. YA. PSHEZHETSKIY (Physical Chemical Institute
Im. L. Ya. Karpov).

ISSLEDOVANIYE SVYAZI MEZHDU KATALITICHESKIMI I POLUPROVODNIKOVYMI
SVOYSTVAMI OKISI TSINKA (Study of the connection between the
catalytic and semiconductor characteristics of zinc oxide). In
Problemy kinetiki i kataliza (Problems of Kinetics and Catalysis),
vol. 8. Izdatel'stvo Akademii Nauk SSSR, 1955. Section III:
Connection between the electric conductivity and catalytic
activity of semiconductors. p. 175-179.

The electric conductivity and catalytic activity of ZnO in the
dehydration of isopropyl alcohol was studied. A description of
the experiments is given. An addition of 0.4 to 3% oxygen
greatly affected the electrical conductivity. The dependence
of electric conductivity of ZnO on temperature in an atmosphere
of pure nitrogen and in an atmosphere of nitrogen containing
3% oxygen is shown in Fig. 2 (p. 176). The yield of acetone
at various reaction temperatures is shown in Fig. 3 (p. 177).
Fig. 4 (p. 177) illustrates the dependence of the conductivity
of ZnO on temperature. Results of experiments carried out in
pure nitrogen and in $N_2 + 2.3\% O_2$ are shown in Fig. 6 (p. 178)
and Figs. 7 and 8 (p. 179). Addition of 3% oxygen has a greater

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MYASNIKOV, A. I. and S. YA. PSHEZHETSKIY, Issledovaniye. . . AID 821 - S

effect on the electric conductivity than on the catalytic activity. The calculated activation energy of dehydrogenation of alcohol in a nitrogen atmosphere is 48 kg.cal/mol. and in the presence of 2.3%, 38 kg.cal/mol. (Fig. 8, p. 179). Eight diagrams. No references given.

2/2

MYASNIKOV, I. A.

✓ The relation between the catalytic properties of zinc oxide and sulfide with their luminescence. L. N. Shekhtel, I. A. Myasnikov, and S. Ya. Panchelskii (L. Ya. Karpov Phys. Chem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 169, 1163-6 (1955). The catalytic properties of pure (autoactivated) ZnO with varying luminescence properties, obtained by the oxidation with pure O at varying temp. and pressure of thin Zn films upon polished quartz plates, were studied in the $\text{MeOH} \rightarrow 2\text{H}_2 + \text{CO}$ reaction at 253-345°, and at 120-225-mm. pressure. The results indicate a direct relation between the catalytic and optical properties in the reaction studied. The quant. difference in the luminescence extinction (several %) and the reduction in coal. (several fold) by O adsorption probably resulted from screening the cond. electrodes.

W. M. Sternberg

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AUTHOR: Myasnikov, I.A.

TITLE: Connection of Catalytic Activity of Zinc Oxide with its Elec Conductivity and Effect of Optic Radiation on these Properties (Svyaz' kataliticheskoy aktivnosti okisi tsinka s yeye elektroprovodnost'yu i vliyaniye opticheskogo izlucheniya na eti svoystva)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Vol. XXI, #2, pp 192-200, 1957, USSR, *Seriya fizicheskaya*

ABSTRACT: In order to establish a quantitative relation between the catalytic activity of semiconductors and their elec conductivity, an experimental investigation was carried out. The dehydrogenation reaction of isopropyl alcohol in a nitrogen flow on zinc oxide as a catalyzer (electronic semiconductor) with insignificant quantities of oxygen was studied. Oxygen pressure amounted to a few thousandths per cent of the partial pressure of the alcohol and nitrogen vapors.

Oxygen, being adsorbed on zinc oxide, considerably changes its elec conductivity. By varying the oxygen concentration, it was possible to change conductivity of the catalyzer in wide ranges

Card 1/4

TITLE:

Connection of Catalytic Activity of Zinc Oxide with its Elec Conductivity and Effect of Optic Radiation on these Properties (Svyaz kataliticheskoy aktivnosti okisi tsinka s eye elektroprovodnost'yu i vliyaniye opticheskogo izlucheniya na eti svoystva)

During an investigation of this reaction with a thin layer of ZnO , it was found that the change in elec conductivity of this layer is linearly related to the change of its catalytic activity. The results are represented on Graph 2, where relative changes in the rate of dehydrogenation reaction are shown as ordinates plotted against relative changes in elec conductivity which are represented by abscissae.

The linearity of this correlation indicates that oxygen, being adsorbed chemically on ZnO , inhibits the centers which cause catalytic activity and elec conductivity to the same degree.

The activated adsorption of oxygen on ZnO was connected, probably, with the origination of a surface compound of oxygen and irregular (internodal) ion of Zn^{+} with participation of a free lattice electron.

Card 2/4

TITLE:

Connection of Catalytic Activity of Zinc Oxide with its Elec Conductivity and Effect of Optic Radiation on these Properties (Svyaz' kataliticheskoy aktivnosti oksidi tsinka s yego elektroprovodnost'yu i vliyaniye opticheskogo izlucheniya na eti svoystva)

A theoretical formula, 5, was derived which shows that elec conductivity is inversely proportional to the square root of oxygen pressure. This dependence was verified by obtained experimental data.

Other experiments were conducted with ultraviolet irradiation of zinc oxide in the region of internal absorption (3,600 Å) in the presence of oxygen and alcohol vapor. The aim of this investigation was to clear up the activity of oxygen released from the zinc oxide in respect to oxidation reaction. The reaction used was the reaction of oxidizing isopropyl alcohol on a thin layer of ZnO in a nitrogen flow and in the presence of small quantities of oxygen. The zinc oxide layer was irradiated by 2 PRK-2 tubes through filters with a transparency for light of 3,600Å wavelength. An increase in conductivity of the ZnO layer was observed as shown in Fig 12. This can apparently be explained by the fact that highly

Card 3/4

TITLE:

Connection of Catalytic Activity of Zinc Oxide with its Elec Conductivity and Effect of Optic Radiation on these Properties (Svyaz kataliticheskoy aktivnosti okisi tsinka s eye elektroprovodnost'yu i vliyaniye opticheskogo izlucheniya na eti svoystva)

active oxygen, in respect to oxidation reaction, is obtained with irradiation in the region of internal absorption.

The mechanism of the transfer of light energy which is absorbed by the whole crystal lattice, to the surface centers on which oxygen is adsorbed, is apparently of the exciton type.

2 figures, 2 oscillograms, 8 graphs and 1 table are included. There are 5 references, all of which are Slavic (Russian).

INSTITUTION:

Physico-Chemical Institute imeni L. Ya. Karpov

PRESENTED BY:

SUBMITTED:

No date

AVAILABLE:

At the Library of Congress.

Card 4/4

1114 SA 18CV I 11

48-5-10/56

SUBJECT: USSR/Luminescence

AUTHORS: Shekhter L.N., Myasnikov I.A., and Pshezhetskiy S.Ya.

TITLE: Investigation of a connection between Luminescence, Catalytic and Adsorption Properties of "Self-activated" Crystals of ZnO and ZnS (Issledovaniye svyazi mezhdum lyuminesentsiyey, kataliticheskimi i adsorbtsionnymi svoystvami "samoaktivirovannykh" kristallov ZnO i ZnS)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #5, pp 664-666 (USSR)

ABSTRACT: The connection between luminescent, catalytic and adsorption properties of thin films and highly dispersed powders of pure ZnO and ZnS was investigated.

The process of catalytic dissociation of methanol on ZnO has a reducing effect on the catalyzer by increasing the concentration of surplus Zn on the surface, and changes correspondingly both the luminescence spectrum and catalytic activity. The quenching of ZnO-Zn and ZnS-Zn luminescence bands by oxygen and sulfur vapor respectively leads also to a reduction of catalytic activity.

Card 1/2

TITLE:

48-5-10/56

Investigation of a connection between Luminescence, Catalytic and Adsorption Properties of "Self-activated" Crystals of ZnO and ZnS (Issledovaniye svyazi mezhdu lyuminesentsiyey, kataliticheskimi i adsorbtsionnymi svoystvami "samoaktivirovannykh" kristallov ZnO i ZnS)

When oxygen is adsorbed on ZnO, then both luminescence and electric conductivity are reduced.

An effect of ultraviolet light from the region of fundamental absorption manifests itself in the photodesorption of oxygen.

Catalyzers-luminophores were also subjected to neutron irradiation.

A system of ZnO.ZnS produced in a special way was studied with respect to its luminescence and catalytic properties, which differ from those of its components.

The report was followed by a discussion.

One Russian reference is cited.

INSTITUTION: Physico-Chemical Institute im. Karpov

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress

Card 2/2

MYASNIKOV, I.A.

Studying the relationship between electric conductivity, adsorption, and sensibilizing properties of zinc oxide. Part 1: Electronic phenomena in ZnO on adsorption of oxygen [with summary in English]. Zhur.fiz.khim.31 no.8:1721-1731 Ag '57. (MIRA 10:12)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova, Moskva.
(Zinc oxide--Electric properties) (Oxygen) (Adsorption)

MYASNIKOV, I.A.

Studying the relation between the electric conductivity and the sensibilizing properties of zinc oxide. Part 2: Electronic phenomena in ZnO associated with catalytic and photocatalytic processes in the gaseous phase [with summary in English]. Zhur.fiz.khim. 31 no.9: 2005-2011 S '57. (MIRA 11:1)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.
(Zinc oxide--Electric properties) (Catalysis)

AUTHOR: Myasnikov, I. A.

70-32-1-12, 83

TITLE: Surface Processes on ZnO and its Electric Conductivity in an Hydrogen Atmosphere (Poverkhnostnyye protsessy na ZnO i yeye elektroprovodn. v atmosfere vodoroda)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1978, Vol. 52, Nr 4, pp. 841 - 847 (USSR)

ABSTRACT: The electric conductivity on 5μ thick ZnO films laid on quartz carriers and possessing polycrystalline structure was measured. From the experimental data results that the technique of measurement was carried out according to an earlier work, and that the experiments took place within a temperature interval of from 200 - 400°C at an hydrogen pressure of from 0.1 to 1 mm Hg torr on conditions of equilibrium and non-equilibrium. It was observed that remarkable changes of conductivity occur only at temperatures above 100°C while a chemisorption of hydrogen on ZnO was noticed already at -70°C. At a rise of temperature of from 100 - 400°C at constant hydrogen pressure the velocity of the reconstitution of the equilibrium of conductivity increases while the value of equilibrium decreases.

Card 1/3

76-12-4-13/13

Surface Processes on ZnO and its Electric Conductivity in an Hydrogen Atmosphere

When an electric discharge or an irradiation with γ - or β -rays is carried out a quick change of the electric conductivity takes place, however, not in vacuum. This effect is explained by an ionization of hydrogen atoms formed on the semiconductor surface by chemisorption. Based on the results obtained a reaction course in three steps dependent on temperature is given. From a series of mathematical calculations and the comparison with the obtained experimental data can be concluded that the present mechanism of the influence of hydrogen on the electric conductivity of the semiconductors can be one of the actually acting mechanisms. It is among other stated that the chemisorption of molecular hydrogen on ZnO can probably take place without dissociation down to atoms and at centers which are not directly connected with free electrons. In this the hydrogen molecule accepts the part as donor and the negative zinc ion that of the acceptor. The change of electric

Card 2/3

76-32-4-19/43

Surface Processes on ZnO and its Electric Conductivity in an Hydrogen Atmosphere

conductivity is connected with a secondary process of dissociation of these surface compounds while the influence of admixtures can be explained by the displacement of the equilibrium. There are 3 figures, 1 table and 11 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva
(Moscow Physico-Chemical Institute imeni L. Ya. Karpov)

SUBMITTED: December 27, 1956

AVAILABLE: Library of Congress

1. Zinc oxides--Surface properties
2. Zinc oxides--Conductivity
3. Zinc films--Applications
4. Hydrogen--Applications

Card 3/3

AUTHOR: Myasnikov, I. A.

SOV/20-120-6-37/59

TITLE: ~~The Electric Conductivity of n-Semiconductors in the Case of~~
Chemisorption of Atoms and Radicals (Elektroprovodnost' n-pol-
uprovodnikov pri khemosorbtsii atomov i radikalov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6,
pp 1298 - 1301 (USSR)

ABSTRACT: In the paper under review the influence of chemisorption of
atoms and radicals upon the electric conductivity of electron
semiconductors of the type ZnO and TiO_2 is investigated. The
experiments were carried out with atomic hydrogen, nitrogen and
with methyl radicals which were produced in a quartz cell by
photolysis of acetone vapors. The time function of the increase
of conductivity (far from equilibrium) in the chemisorption of
atoms and that showing its reduction when no atoms are found in
the domain under investigation well agrees with equations of
the type $\Delta\sigma = k_1 [H]_s t$, $1/\Delta\sigma = k_2 t + \text{const}$, where $\Delta\sigma = \sigma - \sigma_0$
holds and the following denotation is used: σ_0 - conductivity
in a molecular gas. k_1 and k_2 the kinetic constants, $[H]_s$ the

Card 1/3

The Electric Conductivity of n-Semiconductors in the
Case of Chemisorption of Atoms and Radicals

SOV/20-120-6.37/59

steady concentration of chemically sorbed atoms. These equations are associated with the ionization of the chemically sorbed atoms and with recombination. Above 300° the rate of growth of the conductivity is slowed down at a constant steady concentration of the H-atoms in the investigated volume. The chemisorption of methyl radicals reduces the conductivity. The evidence presented leads to the following conclusions: The chemisorption of atoms and of radicals with a subsequent ionisation proceeds with an activation energy considerably below that of the corresponding reactions with molecules. The control and the measurement of the conductivity of semiconductors in chemical reactions which proceed according to the radical mechanism are a convenient method of determining atoms and radicals, of measuring their concentration and of investigating the elementary stages of the processes occurring on the surface in chemisorption and in catalysis. There are 3 figures and 5 references, 4 of which are Soviet.

Card 2/3

The Electric Conductivity of n-Semiconductors in the Case of Chemisorption of Atoms and Radicals SOV/20-120-6-37/59

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: February 22, 1958, by V. A. Kargin, Member, Academy of Sciences, USSR

SUBMITTED: February 5, 1958

1. Semiconductors--Conductivity
2. Semiconductors--Properties
3. Methyl radicals--Absorption
4. Methyl radicals--Adsorption
5. Atoms--Absorption
6. Atoms--Adsorption

Card 3/3

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5(4)

AUTHOR:

Myasnikov, I.A.

66871

SOV/76-33-11-33/47

TITLE:

Investigation of the Intermediates of the Heterogeneous-
catalytic Reaction According to the Method of Measuring the
Electrical Conductivity

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 11, pp 2564-2568
(USSR)

ABSTRACT:

The investigations of the author showed that in electronic semiconductors of the types ZnO and TiO₂, the change in the conductivity by chemisorption in gas- or steam atmosphere occurs only above a certain temperature. According to data by Taylor (Ref 1) chemisorption of the hydrogen on ZnO can be observed already below -80°C, while a noticeable change in conductivity occurs only at temperatures above 70, 80°C. But, if a chemisorption of atomic hydrogen occurs, such a change of conductivity can be observed already at -190°C (Ref 3). This difference cannot be explained by the fact that in molecular hydrogen there is a weak linkage of the hydrogen atoms with the ZnO-surface, but by the fact that the hydrogen molecules (at low temperatures) do not dissociate into atoms. A chemisorbed hydrogen molecule may, for example, adhere to

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4

Investigation of the Intermediates of the
Heterogeneous-catalytic Reaction According to the
Method of Measuring the Electrical Conductivity

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SOV/76-33-11-33/47

the surface, because of a donor-acceptor linkage (which N.D.Sokolov (Ref 4) pointed out) causing the formation of instable compounds on the surface, but this must still be checked experimentally. The following was established by the experimental results on the change in the conductivity of ZnO-films due to chemisorption of hydrogen and nitrogen at irradiation with γ -rays and at various temperatures (Fig 1), at experiments with atomic hydrogen (Fig 2), with isopropanol (Fig 3), and with methyl radicals (formed from acetone) (Fig 4): the adsorption of atoms and radicals changes the electrical conductivity considerably more than does the adsorption of molecules. This phenomenon makes possible the detection of atoms and radicals in various media and on the surface of sorbents and catalysts and thus also the elementary processes of heterogeneous catalytic reactions which take their course according to the radical mechanism may be studied. The strong change of the electronic structure of the surface of semi-conductors by the chemisorption of atoms and radicals also causes a change in the work function of the electrons, because

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6687:

Investigation of the Intermediates of the
Heterogeneous-catalytic Reaction According to the
Method of Measuring the Electrical Conductivity

SOV/76-33-11-33/47

this is in relation with the size of the binary electric layer
in the surface. Therefore one may identify the atoms and
radicals by measurement of the work function. There are 4
figures and 4 references, 3 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya.Karpova, Moskva
(Physico-chemical Institute imeni L.Ya. Karpov, Moscow)

4

Card 3/3

5.4400

AUTHOR:

Myasnikov, I. A.

68855

S/076/60/034/02/020/044
B010/B017

TITLE:

Electrical Conductivity of p-Semiconductors in a Chemisorption of
Molecules, Atoms, and Radicals ¹

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 2, pp 395-404 (USSR)

ABSTRACT:

The experimental part of the present paper was made under the collaboration of the senior laboratory worker A. P. Sysoyeva. The experimental results available in publications show that chemisorption is a complex chemical process which takes place under formation of chemisorbed molecules, atoms, radicals, and ions which are apparently bound to various surface centers (such as cations, anions, and crystal defects). In this paper, the influence of chemisorption exercised by atoms and radicals on the electrical conductivity of the p-semiconductors ZnO and TiO₂ was investigated. The experiments were made with atomic hydrogen, nitrogen, and methyl radicals with the application of a silent electric discharge, or strong gamma radiation (about 1,000 r). The investigations were made in a continuous flow apparatus (Fig 1) and at temperatures of 120 - 350°. The chemisorption of the atoms and radicals mentioned takes place at a considerably higher ionization (under formation of positively and negatively charged particles) as compared with

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Electrical Conductivity of p-Semiconductors in a
Chemisorption of Molecules, Atoms, and Radicals

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S/076/60/034/02/020/044
B010/B017

the chemisorption of molecules. The degree of ionization of the latter is apparently determined by the degree of dissociation of the chemisorbed molecules into atoms. The activation energy of the ion formation in the chemisorption of hydrogen- and nitrogen atoms and methyl radicals is in the range of 2-5 kcal whereas this value is considerably higher for the corresponding molecules: H_2 - 30 kcal and O_2 - 8 kcal. From H_2 no ions are formed since apparently no chemisorption takes place on ZnO and TiO_2 . Hydrocarbons change only little the conductivity, i.e. they do apparently not decompose into radicals on chemisorption. A method which is based on measuring the conductivity in semiconductors under conditions which lead to the formation of free atoms or radicals may be used for determining the latter as well as for the study of heterogeneous catalytic reactions on semiconductor contacts. The observation made in the present paper on the formation of chemisorbed hydrogen atoms (formed as intermediate products in the dehydrogenation reaction) may also be used for the investigation of heterogeneous catalytic reactions which take place under formation of radicals. Due to the results obtained in the present case the correctness of the method by Zurman and Vedler (Ref 8) must be doubted since it does not

Card 2/3

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26.1531

S/020/60/135/005/031/043
B004/B075

AUTHORS: Myasnikov, I. A. and Bol'shun, Ye. V.

TITLE: Adsorption of Alkyl Radicals on Oxide Semiconductors

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, .
pp. 1164-1167

TEXT: In a previous paper (Ref. 1), the first-mentioned author has shown that the adsorption of atoms and radicals on the surface of oxide-semiconductor films, e.g., n-type ZnO, causes a change of the conductivity of the semiconductor. The present paper quantitatively investigated the relationship between the radical concentration and the ZnO conductivity. By means of a ПРК-2 (PRK-2) lamp, acetone vapor was photolyzed in a quartz cell having a mobile quartz frame, onto which the ZnO film (thickness about 5 μ) was applied. The partial pressure of acetone vapor amounted to 0.1 - 100 mm Hg, the pressure of the inert gas (He, Ne, Ye) to 1 - 200 mm Hg. Temperature was 200 - 300°C. The distance between ZnO and the aperture, through which the photolytically generated CH_3 radicals entered, could be varied between 1-15 cm by means of the mobile frame. The difference

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Adsorption of Alkyl Radicals on Oxide
Semiconductors

S/020/60/135/005/031/043
B004/B075

$\Delta\sigma = \sigma_0 - \sigma$ was measured (σ_0 = initial conductivity). $\sigma = \text{const}/\sqrt{n}$ (3) was obtained for σ as a function of radical concentration n , $\sigma = \text{const}/\sqrt{I}$ (5) as a function of the intensity I of the light absorbed. In Fig. 2 the validity of equation (5) is experimentally confirmed. When the partial pressure of acetone was constant, ZnO conductivity linearly increased with increasing pressure of neon. On the strength of these results the authors draw the conclusions that recombination processes and the reactivity of radicals and other free particles of various gases can be investigated by means of this method. Different alcohol radicals have different effects on the conductivity of the semiconductor, so that they can be identified in very low concentrations by means of the method described. The authors thank Professor S. Ya. Pshezhetskiy for discussions. There are 4 figures and 7 references: 2 Soviet, 4 US, and 1 German.

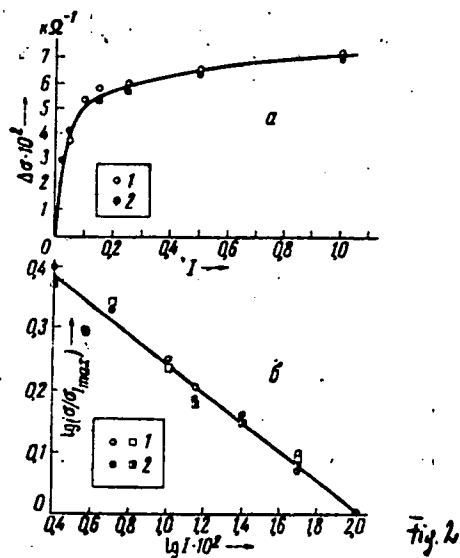
ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: June 22, 1960, by S. S. Medvedev, Academician

SUBMITTED: June 17, 1960
Card 2/3

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S/020/60/135/005/031/043
B004/B075



Legend to Fig. 2: ZnO conductivity as a function of light intensity in the presence of photolyzed acetone; $t = 300^\circ\text{C}$; P acetone = 5 mm Hg. a) $I = f(\Delta\sigma)$, 1: with increasing I, 2: with decreasing I; b) in a logarithmic representation for two films of different thicknesses.

Card 3/3

3250

U/844/62/000/000/121/129
D207/D307

AUTHOR: Myasnikov, I. A.

TITLE: Semiconducting probes in investigation of radiation-chemical processes

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 699-702

TEXT: ZnO n-type films deposited on quartz can be used to detect various gaseous products of radiolysis (radicals and atoms) using the change in the electrical conductivity produced by chemisorption of these products on the films. Different species exert different effects on the electrical conductivity, e.g. methyl radicals reduce the conductivity while hydrogen atoms increase it. Either the change of the conductivity or its initial rate of change can be used to detect radicals present, in amounts down to 10^7 cm^{-3} . When more than one radical is present, several different semiconductor films deposited on the same quartz rod may be employed, each of these se-

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Semiconducting probes in ...

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0207/0307

micconductors being sensitive to a particular radical. Alternatively a single film with several types of radicals chemisorbed on it can be heated gradually in a neutral atmosphere and the conductivity recorded. Peaks on the conductivity-temperature curve represent then particular types of centers due to particular radicals and the areas under the peaks represent concentrations of these radicals. The method described is in the initial development stage and has been found to work only on gases. A simple glass test-cell containing catalyzers above the irradiation area can be used to identify the radicals and to study their recombination processes. There are 3 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

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ACCESSION NR: AP4008168

S/0195/63/004/008/0867/0877

AUTHOR: Myasnikov, I. A. ; Bol'shun, Ye. V. ; Gutman, E. Ye.

TITLE: Mechanism of radical adsorption on semiconductors and desorption of radicals from a hot wall.

SOURCE: Kinetika i kataliz, v. 4, no. 6, 1963, 867-877

TOPIC TAGS: zinc oxide, zinc oxide film, zinc oxide electric conductivity, electric conductivity kinetics, alkyl radical, radical adsorption, radical chemisorption, radical desorption, hot wall emission, ketones photolysis, ketones pyrolysis, free radical, free radical reaction mechanism, free radical reaction kinetics

ABSTRACT: The electric conductivity of ZnO films under stationary conditions and the kinetics of electric conductivity for chemisorption and desorption of alkyl radicals were investigated. The relationship of the disappearance of free

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ACCESSION NR: AP4008168

radicals in a given volume, the adsorption of radicals on the surface and the conductivity (σ) of the film, based on the light intensity I and the pressure of the gas forming the radicals (concentration of molecules M) is shown: At low intensity and high film temperature (low radical concentration on the surface), the relationship is first order in the volume and on the surface (1) $a \sim I \cdot [M]$ where a is $\frac{\Delta \sigma \cdot \sigma_0}{\sigma^2}$. At higher concentrations or intensities, relationships (2) $a \sim \sqrt{I[M]}$ or (3) $a \sim \sqrt[4]{I[M]}$ obtain, i.e., it is first order in the volume and 2nd order on the surface, or vice versa (2), or it is second order in both locations (3). The kinetics of the conductivities of the film during adsorption and desorption of radicals, as derived from experimental data obtained by photolysis and pyrolysis of ketones, compare with these principles. A new variant of the method for determining relative concentration of radicals is proposed. This is based on measuring the starting rate of change of the electric conductivity (at the instant of radical appearance or at a change in their concentration). This determination can be conducted automatically in 1-10 seconds. A new phenomenon was observed - the desorption of radicals,

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ACCESSION NR: AP4008168

on heating, from walls of a glass or quartz vessel in which the radicals were first found. "The authors thank Sr. laboratory worker A. P. Sy*soyeva who participated in the experimental part of the work." Orig. art. has: 8 figures and 20 equations.

ASSOCIATION: Fiziko-khimicheskoy institut. im. L. Ya. Karpova
(Physical-Chemical Institute)

SUBMITTED: 29May62

DATE ACQ: 09Jan64

ENCL: 00

SUB CODE: PH, CH

NO REF SOV: 006

OTHER: 005

Card 3/3

GUTMAN, E.Ye.; MYASNIKOV, I.A.

Effect of the adsorption of free radicals on the contact potential
of n-semiconductors. Dokl. AN SSSR 152 no.3:647-650 S '63.
(MIRA 10:12)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova. Predstavleno
akademikom V.A.Karginym.

ACCESSION NR: AP4034041

8/0020/64/155/006/1407/1410

AUTHOR: Myasnikov, I. A.

TITLE: Radiolysis of hydrocarbons on a semiconductor adsorbent

SOURCE: AN SSSR. Doklady*, v. 155, no. 6, 1964, 1407-1410

TOPIC TAGS: radiolysis, hydrocarbon radiolysis, semiconductor, semiconductor adsorbent, electroconductivity, electroconductivity increase, gamma irradiation, hydrogen, butane, isobutylene, zinc oxide, hydrogen adsorption, hydrogen desorption, adsorption rate, activation energy, alkyl radical

ABSTRACT: Accumulation of active particles on the adsorbent's surface and its charging (double electric layer) may be one of the basic causes which determine the influence of adsorbents on rate and direction of radiochemical heterogeneous processes. Identification of some of these particles appearing during radiolysis on the adsorbent surface and their interaction with adsorbed molecules and the adsorbent at various temperatures and pressures are attempted. The adsorbent, zinc oxide which is stable to gamma rays, was introduced in thin pellicles placed on quartz supports into the test material: hydrogen, butane, isobutylene or neon.

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ACCESSION NR: AP4034041

The tests were conducted in sealed ampoules. Upon radiolysis, electroconductivity of the zinc oxide increased considerably with all test compounds. Increase of butane pressure increased the radiolytic effect in proportion to the pressure. So did liquid butane. Irradiation arrest led to the opposite effect and-reduced electroconductivity. With isobutylene this effect was less pronounced. Increasing the temperature first increased, then decreased electroconductivity which passed through a maximum. At room- and lower temperatures the gamma effect decreased to about the same degree for all compounds. Upon comparison of these results and earlier ones on the interaction between radicals and semiconductors, the authors propose that the effect described is due to chemoadsorption of hydrogen atoms liberated during radiolysis of the hydrocarbons as H and alkyl radicals. These have opposite effects on electroconductivity. Chemoadsorption proceeds at 2 kcal/mole activation energy for the hydrogen atoms, at 6-8 kcal/mole for the alkyl radicals. The former are more mobile, thus attack the surface faster and thereby increasing electroconductivity; the latter act to reduce it. The summary rate of change of conductivity of the pellicle is determined by the equation

$$\frac{dT}{dt} = K_1 [H_2] - K_2 [H_2^*] [C], \quad (3)$$

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ACCESSION NR: AP4034041

where K_1 and K_2 are kinetic constants depending upon temperature, e the concentration of conductivity electrons, H_a the concentration of adsorbed H atoms, H_d that of desorbed H atoms. The constant K_1 characterizing the rate of the first process depends upon adsorption and irradiation rates (reaction rate), K_2 , characterizing the reverse process, only upon temperature. These constants are tabulated for the various test materials, some at various pressures. Isobutylene showed the highest reactivity as regards the hydrogen atoms. "A. P. Cy*soeva took part in the experimental part of this work." Orig. art. has: 3 figures, 4 formulas and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (L. Ya. Karpov Physico-Chemical Institute)

SUBMITTED: 27Jun62

ENCL: 00

SUB CODE: NB, GC

NO REF SOV: 003

OTHER: 002

L 18260-65 EWT(1)/ENG(k)/ENT(m)/EFF(c)/EWP(j)/T/EWA(h) Po-4/Pr-4/Feb/Pz-6
TJP(c)/RPL RM/WW/JFW

ACCESSION NR: AP5000921

S/0020/64/159/004/0894/0896

AUTHOR: Nyasnikov, I. A.; Malinova, G. V.

TITLE: Semiconductor² probe for separate monitoring of free radicals⁶ and molecules

SOURCE: AN SSSR. Doklady, v. 159, no. 4, 1964, 894-896

TOPIC TAGS: semiconductor probe, free radical probe, free atom probe, active molecule probe, zinc oxide thin film, semiconductor thin film, chemical process monitoring

ABSTRACT: A semiconductor probe for separate recording and monitoring of changes in the concentration of free radicals and atoms in chemical or photochemical processes has been developed from porous adsorbent thin films made of zinc oxide. Inadequacy of chemical and EPR methods for investigating intermediate active species during a chemical process prompted the search for a new monitoring device. The functioning of the device is based on the difference between the relative change of electrical conductivity of the porous semiconductor films in the presence of free radicals or atoms and that of active molecules chemi-

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ACCESSION NR: AP5000921

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sorbed in the film. It was shown experimentally that the change in conductivity of zinc oxide porous films on chemisorption of free radicals (CH_3) or atoms (H) decreased with increasing film thickness to zero for a certain critical value of thickness. The change in conductivity on chemisorption of active molecules (O_2 , H_2) was found to be independent of the film thickness. The relationship between the conductivity and thickness of the porous semiconductor films in the presence of free radicals is governed by their lifetime inside the pores (Knudsen law). A miniature device combining zinc oxide thin (e.g., $10\ \mu$) film with a zinc oxide tablet (e.g., 1 mm thick) in a quartz frame in an electrically compensated circuit constituted a combination probe which reacted only to free radicals or atoms. A similar device could also be made of two nonporous semiconductor thin films separated by a porous membrane permeable only to free radicals in order to study the effect of the films on the electrical and optical properties of semiconductors. The combination probe might be useful for the study of the mechanisms of photolysis, radiolysis, cracking, and chemical reactions in which free radicals and active molecules are produced simultaneously. Orig. art. has: 3 figures.

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L 18260-65

ACCESSION NR: AP5000921

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute) 2

SUBMITTED: 21May64

ENCL: 00

SUB CODE: EC, GC

NO REF SOV: 002

OTHER: 001

ATD PRESS: 3155

Card 3/3

PANESH, A.M.; MYASNIKOV, I.A.

Study of adsorbed molecules by the electronic impact method.
Zhur. fiz. khim. 39 no.9:2326-2327 S '65. (MIRA 18:10)

1. Moskovskiy fiziko-khimicheskiy institut imeni L.Ya.
Karpova.

L 9736-66 EWT(m)/EWP(j) RM
ACC NR: AP5027170 SOURCE CODE: UR0076/65/039/010/2376/2379

AUTHOR: Tsivenko, V.I.; Myasnikov, I.A.

ORG: Moscow Physicochemical Institute im. L. Ya. Karpov (Moskovskiy fiziko-khimicheskiy institut)

TITLE: Study of intermediate activated particles in gaseous chemical reactions by the method of semiconductor probes

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 10, 1965, 2376-2379

TOPIC TAGS: ethylene, free radical, hydrogen, semiconductor device, zinc oxide, photolysis, *particle distribution, chemical reaction*

ABSTRACT: In order to develop the semiconductor probe technique, a study was made of a chemical process involving the appearance of two types of intermediate activated particles in the reaction zone: alkyl radicals and hydrogen atoms. The model reaction chosen was the photochemical decomposition of ethylene. It was possible to detect a lack of uniformity in the distribution of the concentrations of atoms and radicals in the volume of the reaction vessel; this was due to the different mobilities and reactivities of these particles. It is

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UDC 541.124/.128

L 9736-66

ACC NR: AP5027170

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natural to assume that this nonuniformity should lead to a nonuniform distribution in the reaction vessel of the molecular reaction products as well. The use of the method of semiconductor probes makes it possible not only to detect the presence of atoms and radicals in the reaction zone, but also to follow the processes of generation and disappearance of the particles, their conversions, and the changes in the concentrations of the atoms and radicals in the course of a chemical reaction. Orig. art. has: 3 figures and 3 formulas.

SUB CODE: 20, 07 / SUBM DATE: 23May64 / ORIG REF: 002 / OTH REF: 005

Card 2/2

MYASNIKOV, I.A.; BOL'SHUN, Ye V. Prinimala uchastiye KOZHEMYAKIN, I.P.

Methods used in investigations of the heterogeneous recombination
of free radicals and of their interaction with the adsorbed layer.
Kin. i kat. 6 no. 6:99701002 N-D '65 (MIRA 19:1)

1. Fiziko-khimicheskiy institut imeni Farpova. Submitted May 25,
1964.

L 26358-66 EWT(1)/EWT(m) JD

ACC NR: AP6013378

SOURCE CODE: UR/0195/66/007/002/0196/0201

AUTHOR: Pospelova, I. N.; Myasnikov, I. A.

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: Study of the recombination of hydrogen atoms by methods of calorimetry, diffusion, and semiconductor probes

SOURCE: Kinetika i kataliz, v. 7, no. 2, 1966, 196-201

TOPIC TAGS: hydrogen, atom recombination, recombination coefficient

ABSTRACT: The use of semiconductor films as probes in the determination of absolute coefficients of heterogeneous recombination of hydrogen atoms by Smith's diffusion method (W. V. Smith, *J. Chem. Phys.* 11, 110, 1943) is described. The results obtained are compared with measurements made by calorimetric and Wrede methods, of the relative concentrations of hydrogen atoms along the surface of a cylinder. Values of recombination coefficients of atomic hydrogen on glass (obtained by the method of semiconductor probes, calorimetry, and the Wrede diffusion method) are compared. The data show that the disappearance of free hydrogen atoms under the given conditions takes place at the walls of the vessel and on the surface of the film in conformity with the first-order law. The experimental part of the work was performed and evaluated in the laboratory of S. Ya. Pshezhetskiy, for which the authors thank the entire

UDC: 537.568 : 546.11-123

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L 26358-66

ACC NR: AP6013378

staff of this laboratory. Orig. art. has: 3 figures, 6 formulas.

SUB CODE: 07/ SUBM DATE: 05Sep64/ ORIG REF: 005/ OTH REF: 003

Card 2/2 *jt*